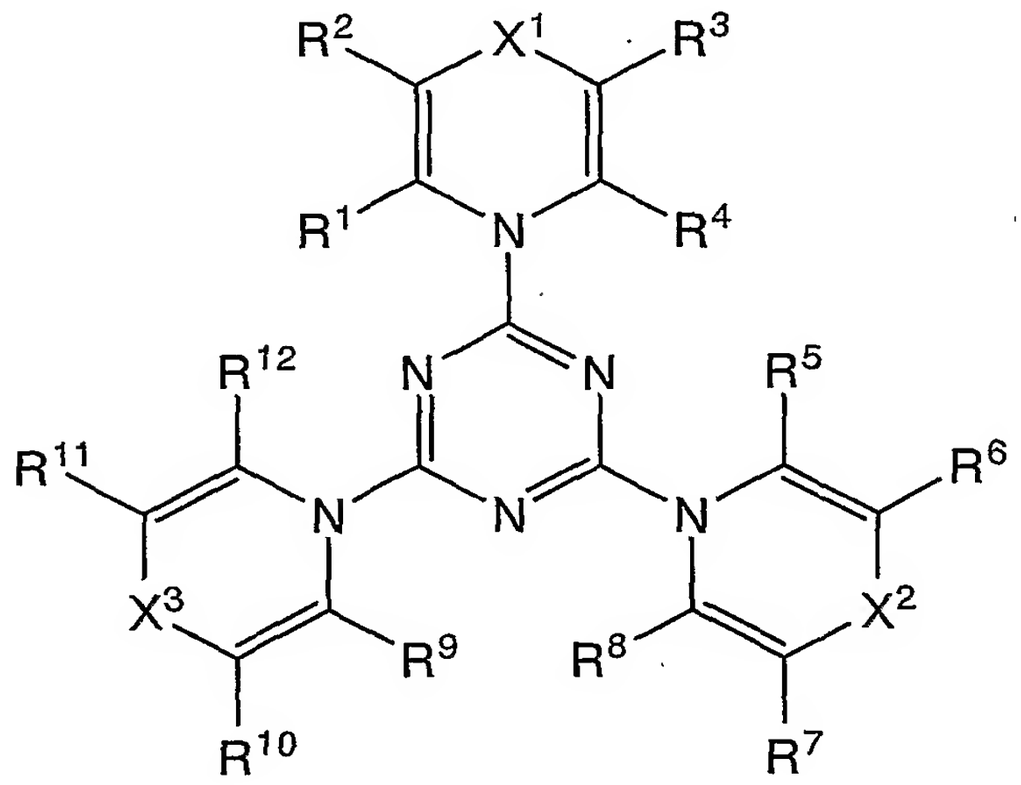
CLAIMS

1. A light emitting element comprising:

a pair of electrodes, and

a layer between the pair of electrodes, the layer containing and a metal oxide and a triazine derivative represented by a general formula (1),



(1)

wherein, in the general formula (1), R^1 to R^{12} are individually independent, or any one of R^1 and R^2, R^3 and R^4, R^5 and R^6, R^7 and R^8, R^9 and R^{10}, and R^{11} and R^{12} is bonded to form a ring, when R^1 to R^{12} are individually independent, R^1 to R^{12} are individually any one of hydrogen, an alkyl group having 1 to 6 carbon atoms, an alkoxy group having 1 to 6 carbon atoms, a halogen group, an acyl group having 1 to 6 carbon atoms, an alkoxycarbonyl group having 1 to 6 carbon atoms, an aryl group having 6 to 30 carbon atoms, preferably 6 to 14 carbon atoms, and a heteroaromatic group having 2 to 18 carbon atoms, preferably 2 to 14 carbon atoms,

the heteroaromatic group have a monocyclic structureof a 5-membered ring, a monocyclic structure of a 6-membered ring, a polycyclic structure containing any one of a 5-membered ring and a 6-membred ring, or a polycyclic structure containing both of a 5-membered ring and a 6-membered ring, and contains any one atom of nitrogen, oxide, and sulfur,

when any one of R^1 and R^2, R^3 and R^4, R^5 and R^6, R^7 and R^8, R^9 and R^{10}, and

R^{11} and R^{12} is bonded to form a ring, the ring is any one of an aromatic ring, a heterocycle and an alicycle,

a bond of R^1 and R^2, a bond of R^3 and R^4, a bond of R^5 and R^6, a bond of R^7 and R^8, a bond of R^9 and R^{10}, and a bond of R^{11} and R^{12} are individually independent,

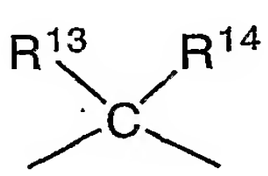
R^1 and R^2 is bonded to form any one of an aromatic ring, a heterocycle, and an alicycle,

and R^3 to R^{12} is individually hydrogen or a substituent,

the aromatic ring is condensed with another aromatic ring,

the aromatic ring, the heterocycle, and the alicycle individually have a substituent such as an oxo group and an alkyl group having 1 to 6 carbon atoms, and

X^1, X^2, and X^3 indicate individually any group of formulas (2) to (7),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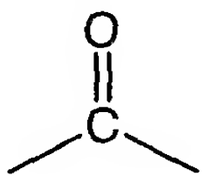
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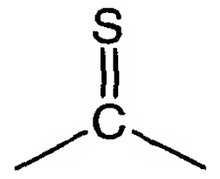
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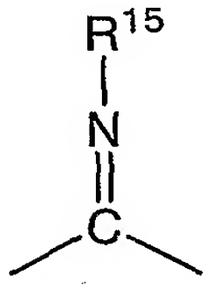
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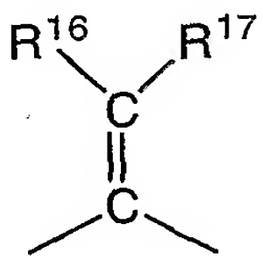
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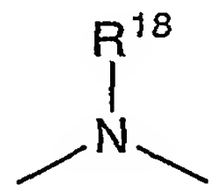

(7)

wherein, in the formula (2), R^{13} and R^{14} is individually independent, or bonded to form a ring,

when R^{13} and R^{14} are individually independent, R^{13} and R^{14} are individually any one of hydrogen, an alkyl group having 1 to 6 carbon atoms, an aryl group having 6 to 30 carbon atoms, preferably 6 to 14 carbon atoms, and a heteroaromatic group having 2 to 18 carbon atoms, preferably 2 to 10 carbon atoms,

in the formula (2), the aryl group and the heteroaromatic group individually have a substituent,

the heteroaromatic group have a monocyclic structure of a 5-membered ring or a 6-membered ring, a polycyclic structure containing any one or both of a 5-membered ring and a 6-membered ring, and contains any one atom of nitrogen, oxide, and sulfur, and

when R^{13} and R^{14} are bonded to form a ring, the ring is an alicycle having 3 to 10 carbon atoms, preferably 6 carbon atoms,

wherein, in the formula (5), R^{15} is any one of hydrogen, an aryl group having 6 to 30 carbon atoms, preferably 6 to 14 carbon atoms, and a heteroaromatic group having 2 to 18 carbon atoms, preferably 2 to 10 carbon atoms,

in the formula (5), the aryl group may have one or two or more of substituents such as an alkyl group having 1 to 6 carbon atoms, an acyl group having 1 to 6 carbon atoms, a halogen group, and an oxo group, or may be unsubstituted,

and the heteroaromatic group have a monocyclic structure of a 5-membered ring, a monocyclic structure of a 6-membered ring, a polycyclic structure containing any one of a 5-membered ring and a 6-membred ring, or a polycyclic structure containing both of a 5-membered ring and a 6-membered ring, and contains any one atom of nitrogen, oxide, and sulfur,

wherein in the formula (6), R^{16} and R^{17} are individually independent, and any one of hydrogen, an aryl group having 6 to 30 carbon atoms, a heteroaromatic group having 2 to 18 carbon atoms, preferably 2 to 10 carbon atoms, and a cyano group,

in the formula (6), the aryl group have one or more of substituents such as an alkyl group having 1 to 6 carbon atoms, a halogen group, and an aryl group having 6 to 30 carbon atoms, preferably 6 to 14 carbon atoms, or be unsubstituted, and

the heteroaromatic group ave a monocyclic structure of a 5-membered ring, a monocyclic structure of a 6-membered ring, a polycyclic structure containing any one of a 5-membered ring and a 6-membred ring, or a polycyclic structure containing both of a 5-membered ring and a 6-membered ring, and contains any one atom of nitrogen, oxide, and sulfur,

wherein, in the formula (7), R^{18} is any one of hydrogen, an alkyl group having 1 to 6 carbon atoms, an aryl group having 6 to 30 carbon atoms, preferably 6 to 14 carbon atoms, and a heteroaromatic group having 2 to 18 carbon atoms, preferably 2 to 10 carbon atoms,

in the formula (7), the aryl group ave a substituent such as a dialkylamino group, and

the heteroaromatic group have a monocyclic structure of a 5-membered ring, a monocyclic structure of a 6-membered ring, a polycyclic structure containing any one of a 5-membered ring and a 6-membred ring, or a polycyclic structure containing both of a 5-membered ring and a 6-membered ring, and contains any atom of nitrogen, oxide, and sulfur.

2. A light emitting element according to claim 1, wherein the metal oxide is a molybdenum oxide, a vanadium oxide, a titanium oxide, a lithium oxide, or a rhenium oxide.

3. A light emitting element according to claim 1, wherein the light emitting element includes a luminescent material having an emission wavelength in the bandwidth from 400 to 500 nm between the pair of the electrodes.

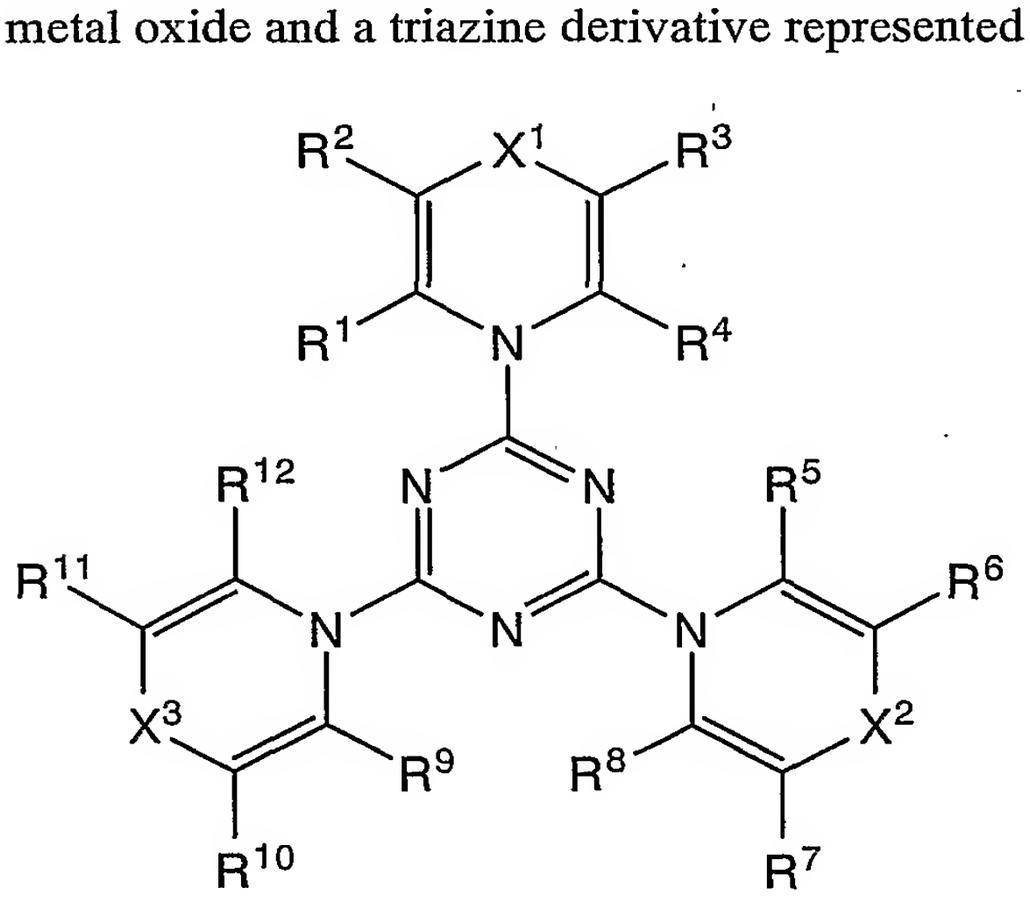
4. A light emitting device comprising:

a semiconductor layer,

a pair of electrodes provided over the semiconductor layer; and

a first layer, a second layer, and a third layer provided in this order between the pair of the electrodes,

wherein any one of the first layer to the third layer has a layer containing a metal oxide and a triazine derivative represented by the general formula (1),



(1)

wherein, in the general formula (1), R^1 to R^{12} are individually independent, or any one of R^1 and R^2, R^3 and R^4, R^5 and R^6, R^7 and R^8, R^9 and R^{10}, and R^{11} and R^{12} is bonded to form a ring, when R^1 to R^{12} are individually independent, R^1 to R^{12} are individually any one of hydrogen, an alkyl group having 1 to 6 carbon atoms, an alkoxy group having 1 to 6 carbon atoms, a halogen group, an acyl group having 1 to 6 carbon atoms, an alkoxycarbonyl group having 1 to 6 carbon atoms, an aryl group having 6 to 30 carbon atoms, preferably 6 to 14 carbon atoms, and a heteroaromatic group having 2 to 18 carbon atoms, preferably 2 to 14 carbon atoms,

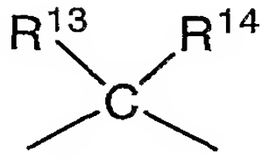
the heteroaromatic group have a monocyclic structureof a 5-membered ring, a monocyclic structure of a 6-membered ring, a polycyclic structure containing any one of a 5-membered ring and a 6-membred ring, or a polycyclic structure containing both of a 5-membered ring and a 6-membered ring, and contains any one atom of nitrogen, oxide, and sulfur,

when any one of R^1 and R^2, R^3 and R^4, R^5 and R^6, R^7 and R^8, R^9 and R^{10}, and R^{11} and R^{12} is bonded to form a ring, the ring is any one of an aromatic ring, a heterocycle and an alicycle,

a bond of R^1 and R^2, a bond of R^3 and R^4, a bond of R^5 and R^6, a bond of R^7 and R^8, a bond of R^9 and R^{10}, and a bond of R^{11} and R^{12} are individually independent, R^1 and R^2 is bonded to form any one of an aromatic ring, a heterocycle, and an alicycle, and R^3 to R^{12} is individually hydrogen or a substituent,

the aromatic ring is condensed with another aromatic ring,

the aromatic ring, the heterocycle, and the alicycle individually have a substituent such as an oxo group and an alkyl group having 1 to 6 carbon atoms, and X^1, X^2, and X^3 indicate individually any group of formulas (2) to (7),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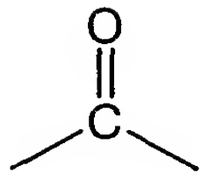
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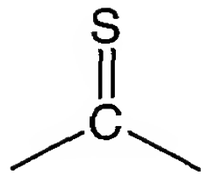
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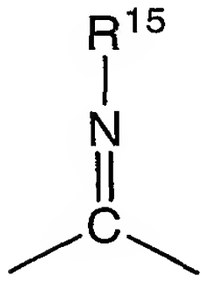
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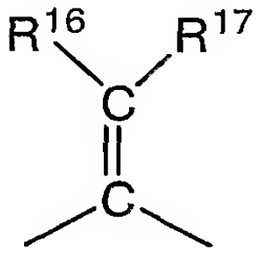
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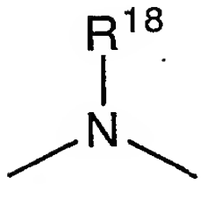
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in the formula (2), the aryl group and the heteroaromatic group individually have a substituent,

the heteroaromatic group have a monocyclic structure of a 5-membered ring or a 6-membered ring, a polycyclic structure containing any one or both of a 5-membered ring and a 6-membered ring, and contains any one atom of nitrogen, oxide, and sulfur, and

when R^{13} and R^{14} are bonded to form a ring, the ring is an alicycle having 3 to 10 carbon atoms, preferably 6 carbon atoms,

wherein, in the formula (5), R^{15} is any one of hydrogen, an aryl group having 6 to 30 carbon atoms, preferably 6 to 14 carbon atoms, and a heteroaromatic group having 2 to 18 carbon atoms, preferably 2 to 10 carbon atoms,

in the formula (5), the aryl group may have one or two or more of substituents such as an alkyl group having 1 to 6 carbon atoms, an acyl group having 1 to 6 carbon atoms, a halogen group, and an oxo group, or may be unsubstituted,

and the heteroaromatic group have a monocyclic structure of a 5-membered ring, a monocyclic structure of a 6-membered ring, a polycyclic structure containing

any one of a 5-membered ring and a 6-membred ring, or a polycyclic structure containing both of a 5-membered ring and a 6-membered ring, and contains any one atom of nitrogen, oxide, and sulfur,

wherein in the formula (6), R^{16} and R^{17} are individually independent, and any one of hydrogen, an aryl group having 6 to 30 carbon atoms, a heteroaromatic group having 2 to 18 carbon atoms, preferably 2 to 10 carbon atoms, and a cyano group,

in the formula (6), the aryl group have one or more of substituents such as an alkyl group having 1 to 6 carbon atoms, a halogen group, and an aryl group having 6 to 30 carbon atoms, preferably 6 to 14 carbon atoms, or be unsubstituted, and

the heteroaromatic group ave a monocyclic structure of a 5-membered ring, a monocyclic structure of a 6-membered ring, a polycyclic structure containing any one of a 5-membered ring and a 6-membred ring, or a polycyclic structure containing both of a 5-membered ring and a 6-membered ring, and contains any one atom of nitrogen, oxide, and sulfur,

wherein, in the formula (7), R^{18} is any one of hydrogen, an alkyl group having 1 to 6 carbon atoms, an aryl group having 6 to 30 carbon atoms, preferably 6 to 14 carbon atoms, and a heteroaromatic group having 2 to 18 carbon atoms, preferably 2 to 10 carbon atoms,

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5. A light emitting device according to claim 4, wherein the metal oxide is a molybdenum oxide, a vanadium oxide, a titanium oxide, a lithium oxide, or a rhenium oxide.

6. A light emitting device according to claim 4, wherein the light emitting element includes a luminescent material having an emission wavelength in the bandwidth from 400 to 500 nm between the pair of the electrodes.

FIG. 1